SEQUENCE LISTING

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      Danen-Van Oorschot, Astrid Adriana Anna Maria

<120> Molecules Ineracting with Apoptin

<130> LEBV.006.01

<140> 09/555,981
<141> 1998-12-03

<150> PCT/NL98/00687
<151> 1998-12-03

<150> 97203781.6 EP
<151> 1997-12-03

<160> 13

<170> PatentIn Ver. 2.1

<210> 1
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<212> DNA
<213> Apoptin-Associating Clone

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ttcaactaaa gaaggagatc caaaagcttg aaacggagtt acaagaggct accaaagaat 180
tccagattaa agaggatatt cctgaaacaa agatgaaatt cttatcagtt gaaactcctg 240
agaatgacag ccagttgtca aatatctcct gttcgtttca agtgagctcg aaagttcctt 300
atgagataca aaaaggacaa gcacttatca cctttgaaaa agaagaagtt gctcaaaatg 360
tggtaagcat gagtaaacat catgtacaga taaaagatgt aaatctggag gttacggcca 420
agccagttcc attaaattca ggagtcagat tccaggttta tgtagaagtt tctaaaatga 480
aaatcaatgt tactgaaatt cctgacacat tgcgtgaaga tcaaatgaga gacaaactag 540
agctgagctt ttcaaagtcc cgaaatggga ggcggagang tggaccgcgt gggactatga 600
cagacagtcc gggagtgcag tcatcacgtt tggnggagat tgggagtggc tgacannn   658

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<212> DNA
<213> Apoptin-Associating Clone

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cgtttcaagg tgagctcgaa agttccttat gagatacaaa aaggacaatg cacttatcac 180
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ataataagat gtaaatctgg aggttacggc caaagccaag ttccattaat attcaaggag 300
tcangattcc agngttatgc tagaangttt ctaaaaatga naatcaatgg ttactggaaa 360
ttcctggaca cattgcgntg aaagatcaag atgacgaaga caaactaaga agctgagctt 420
ttcaaaagtc ccgaaanatg gaagagcggt agagggtggn accgcgtgng anctatgaca 480
agacaagncc ggggaagntg cagtccatca cgtttgtnng aagattggan gtnggctgac 540
caangaattt tgaaaaagga gangaattac ccctctttan gagtaanatc aaaaccctgc 600
cataanaagt tnactggttt cncccattac acagnantta cannttganc aanantannc 660
aggataattt ncaggggaan aatctnaagn atggcaagnt gacttctgga caanggt    717
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<210> 3
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<213> Apoptin-Associating Clone

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His Glu Gly Arg Gly Ile Met Glu Ala Asp Lys Asp Asp Thr Gln Gln
 1               5                  10                  15

Ile Leu Lys Glu His Ser Pro Asp Glu Phe Ile Lys Asp Glu Gln Asn
            20                  25                  30

Lys Gly Leu Ile Asp Glu Ile Thr Lys Lys Asn Ile Gln Leu Lys Lys
        35                  40                  45

Glu Ile Gln Lys Leu Glu Thr Glu Leu Gln Glu Ala Thr Lys Glu Phe
    50                  55                  60

Gln Ile Lys Glu Asp Ile Pro Glu Thr Lys Met Lys Phe Leu Ser Val
65                  70                  75                  80

Glu Thr Pro Glu Asn Asp Ser Gln Leu Ser Asn Ile Ser Cys Ser Phe
                85                  90                  95

Gln Val Ser Ser Lys Val Pro Tyr Glu Ile Gln Lys Gly Gln Ala Leu
            100                 105                 110

Ile Thr Phe Glu Lys Glu Glu Val Ala Gln Asn Val Val Ser Met Ser
        115                 120                 125

Lys His His Val Gln Ile Lys Asp Val Asn Leu Glu Val Thr Ala Lys
        130                 135                 140

Pro Val Pro Leu Asn Ser Gly Val Arg Phe Gln Val Tyr Val Glu Val
145                 150                 155                 160
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Ser Lys Met Lys Ile Asn Val Thr Glu Ile Asp Asp Thr Leu Arg Glu
               165   170   175

Asp Gln Met Arg Asp Lys Leu Glu Leu Ser Phe Ser Lys Ser Arg Asn
               180   185   190

Gly Arg Arg Arg Cys Gly Pro Arg Gly Thr Met Thr Asp Ser Pro Gly
               195   200   205

Val Gln Ser Ser Arg Leu Val Glu Ile Gly Ser
               210   215

<210> 4
<211> 305
<212> PRT
<213> Apoptin-Associating Clone

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Met Glu Ala Asp Lys Asp Asp Thr Gln Gln Ile Leu Lys Glu His Ser
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Pro Asp Glu Phe Ile Lys Asp Glu Gln Asn Lys Gly Leu Ile Asp Glu
              20   25   30

Ile Thr Lys Lys Asn Ile Gln Leu Lys Lys Glu Ile Gln Lys Leu Glu
          35   40   45

Thr Glu Leu Gln Glu Ala Thr Lys Glu Phe Gln Ile Lys Glu Asp Ile
    50   55   60

Pro Glu Thr Lys Met Lys Phe Leu Ser Val Glu Thr Pro Glu Asn Asp
65   70   75   80

Ser Gln Leu Ser Asn Ile Ser Cys Ser Phe Gln Val Ser Ser Lys Val
              85   90   95

Pro Tyr Glu Ile Gln Lys Gly Gln Ala Leu Ile Thr Phe Glu Lys Glu
          100   105   110

Glu Val Ala Gln Asn Val Val Ser Met Ser Lys His His Val Gln Ile
          115   120   125

Lys Asp Val Asn Leu Glu Val Thr Ala Lys Pro Val Pro Leu Asn Ser
          130   135   140

Gly Val Arg Phe Gln Val Tyr Glu Val Ser Lys Met Lys Ile Asn Val

145		150		155		160

Thr Glu Ile Pro Asp Thr Leu Arg Glu Asp Gln Met Arg Asp Lys Leu
                 165   170   175

Glu Leu Ser Phe Ser Lys Phe Arg Asn Gly Gly Gly Glu Val Asp Arg
             180   185   190

Val Asp Tyr Asp Arg Gln Ser Gly Ser Ala Val Ile Thr Phe Val Glu
        195   200   205

Ile Gly Val Asp Lys Ile Leu Lys Lys Lys Glu Tyr Pro Leu Pro Ile
    210   215   220

Asn Gln Thr Cys His Arg Val Thr Val Ser Pro Tyr Thr Glu Ile His
225   230   235   240

Leu Lys Lys Tyr Gln Ile Phe Ser Gly Thr Ser Lys Arg Thr Val Leu
             245   250   255

Leu Thr Gly Met Glu Gly Ile Gln Met Asp Glu Glu Ile Val Glu Asp
             260   265   270

Leu Ile Asn Ile His Phe Gln Arg Ala Lys Asn Gly Gly Gly Glu Val
        275   280   285

Asp Val Val Lys Cys Ser Leu Gly Gln Pro His Ile Ala Tyr Phe Glu
    290   295   300

Glu
305

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<211> 659
<212> DNA
<213> Apoptin-Associating Clone

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gccggagggt gttggtcact ggatttcctg ccagcctcag gctgagtgag gaggagctgc  180
tggacaanct anagatcttc tttggcaaga ctaggaacgg aggtggcnat gtggacnttc  240
ggganctact gccagggant gtcatgctgg ggtttgctag ggatggagtg gctcancgtc  300
tgtgccaaat cggccatttc acagtgccac tgggtgggca gcangtccct ctgagagtct  360
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cggtactggt gctcaacatt cctgatatct tggatggccc ggagctgcat gacgtcctgg  480
anatccactt ccagaanccc acccgcgggg cggagatgt aagacgccct gacagtcgta  540
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ccccaaggac aacagggcct aacagtcttc acctcctgaa tcaaggctan gggcctcccc 600
cttctcatcc tccccacccc ccccgccaaa ggttctcaan actgggcctg ggctttntg 659

<210> 6
<211> 631
<212> DNA
<213> Apoptin-Associating Clone

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gccagttgag tggccggagg gtgttggtca ctggatttcc tgccagcctc aggctgagtg 180
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ccagttcccc nctcggtact gggtgctcaa cattcctgat atcttggatt ggcccggagc 480
tgcatnacgt cctgganatc aacttcanaa gcccacccgc cggggcngng aggtanaagg 540
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<213> Apoptin-Associating Clone

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tgcaggtcca gcccttggag ctgcccatgg tcaccaccat ccaggtgatg gtgtccaagc 180
canttgagtg gccggagggt gttggtcact ggatttcctg ccagcctcag gctgantgag 240
gaggagctgc tggacagcta tgagatcttc tttggcaana ctangaacgg angtggcgat 300
gtggacgttc gggagctact gccaggaagt gtcatgctgg ggtttgctac ggatggagtg 360
gctcagcgtc tgtgccaaat cggccagttc acaagtgcca ctgggtgggc agcaagtccc 420
tctgagagtc tctccgtatg tgantggnga gatcagaatg ctganattaa gtcgcatcca 480
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<210> 8
<211> 138
<212> PRT
<213> Apoptin-Associating Clone

<400> 8

His Glu Gly Pro Lys Val Ala Glu Gln Val Leu Gln Gln Lys Glu His
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Thr Ile Asn Met Glu Glu Cys Arg Leu Arg Val Gln Val Gln Pro Leu
            20   25   30

Glu Leu Pro Met Val Thr Thr Ile Gln Val Ser Ser Gln Leu Ser Gly
        35   40   45

Arg Arg Val Leu Val Thr Gly Phe Pro Ala Ser Leu Arg Leu Ser Glu
    50   55   60

Glu Glu Leu Leu Asp Lys Leu Glu Ile Phe Phe Gly Lys Thr Arg Asn
65   70   75   80

Gly Gly Gly Asp Val Asp Val Arg Glu Leu Leu Pro Gly Ser Val Met
            85   90   95

Leu Gly Phe Ala Arg Asp Gly Val Ala Gln Arg Leu Cys Gln Ile Gly
        100   105   110

Gln Val His Ser Ala Thr Gly Trp Ala Ser Ser Pro Ser Glu Ser Leu
        115   120   125

Ser Val Cys Glu Trp Gly Asp Pro Glu Gly
    130   135

<210> 9
<211> 282
<212> PRT
<213> Apoptin-Associating Clone

<400> 9
Met Ser Ala Pro Leu Asp Ala Ala Leu His Ala Leu Gln Glu Glu Gln
1   5   10   15

Ala Arg Leu Lys Met Arg Leu Trp Asp Leu Gln Gln Leu Arg Lys Glu
            20   25   30

Leu Gly Asp Ser Pro Lys Asp Lys Val Pro Phe Ser Val Pro Lys Ile
        35   40   45

Pro Leu Val Phe Arg Gly His Thr Gln Gln Asp Pro Glu Val Pro Lys
    50   55   60

Ser Leu Val Ser Asn Leu Arg Ile His Cys Pro Leu Leu Ala Gly Ser
65   70   75   80

Ala Leu Ile Thr Phe Asp Asp Pro Lys Val Ala Glu Gln Val Leu Gln
                85   90   95

Gln Lys Glu His Thr Ile Asn Met Glu Glu Cys Arg Leu Arg Val Gln
            100   105   110

Val Gln Pro Leu Glu Leu Pro Met Val Thr Thr Ile Gln Val Ser Ser
            115   120   125

Gln Leu Ser Gly Arg Arg Val Leu Val Thr Gly Phe Pro Ala Ser Leu
            130   135   140

Arg Leu Ser Glu Glu Glu Leu Leu Asp Lys Leu Glu Ile Phe Phe Gly
145   150   155   160

Lys Thr Arg Asn Gly Gly Gly Asp Val Asp Val Arg Glu Leu Leu Pro
                165   170   175

Gly Ser Val Met Leu Gly Phe Ala Arg Asp Gly Val Ala Gln Arg Leu
                180   185   190

Cys Gln Ile Gly Gln Phe Thr Val Pro Leu Gly Gly Gln Gln Val Pro
            195   200   205

Leu Arg Val Ser Pro Tyr Val Asn Gly Glu Ile Gln Lys Ala Glu Ile
            210   215   220

Arg Ser Gln Pro Val Pro Arg Ser Val Leu Val Leu Asn Ile Pro Asp
225   230   235   240

Ile Leu Asp Gly Pro Glu Leu His Asp Val Leu Glu Ile His Phe Gln
                245   250   255

Lys Pro Thr Arg Gly Gly Gly Gly Arg Gly Pro Asp Ser Arg Thr Pro
            260   265   270

Arg Thr Ala Gly Pro Ser Ser Leu His Leu
            275   280

<210> 10
<211> 207
<212> PRT
<213> Apoptin-Associating Clone

<400> 10
His Glu Gly Arg Ile His Cys Pro Leu Leu Ala Gly Ser Ala Leu Ile

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        Thr Phe Asp Asp Pro Lys Val Ala Glu Gln Val Leu Gln Gln Lys Glu
                      20                  25                  30

        His Thr Ile Asn Met Glu Glu Cys Arg Leu Arg Val Gln Val Gln Pro
                      35                  40                  45

        Leu Glu Leu Pro Met Val Thr Thr Ile Gln Val Met Val Ser Ser Xaa
                      50                  55                  60

        Leu Ser Gly Arg Arg Val Leu Val Thr Gly Phe Pro Ala Ser Leu Arg
        65                  70                  75                  80

        Leu Xaa Glu Glu Glu Leu Leu Asp Lys Leu Asp Leu Leu Trp Gln Xaa
                      85                  90                  95

        Xaa Glu Arg Xaa Trp Arg Cys Gly Arg Ser Gly Ala Thr Ala Arg Glu
                      100                 105                 110

        Cys His Ala Gly Val Cys Tyr Gly Trp Ser Gly Ser Ala Ser Val Pro
                      115                 120                 125

        Asn Arg Pro Val His Lys Cys His Trp Val Gly Ser Lys Ser Leu Glu
        130                 135                 140

        Ser Leu Arg Met Xaa Xaa Arg Ser Glu Cys Xaa Val Ala Ser Asn Ser
        145                 150                 155                 160

        Ser Leu Xaa Tyr Trp Cys Ser Xaa Ser Xaa Leu Gly Leu Ala Pro Xaa
                      165                 170                 175

        Xaa Met Xaa Ser Gly Arg Phe Asn Xaa Xaa Ser Pro Xaa Xaa Xaa Xaa
                      180                 185                 190

        Gly Lys Xaa Xaa Pro Xaa Xaa Ser Xaa Xaa Xaa Xaa Ser Xaa Ala
                      195                 200                 205
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<210> 11
<211> 646
<212> PRT
<213> Apoptin-Associating Clone

<400> 11
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Gly Glu His Leu Val His Val Lys Lys Asn Gly Gln His Val Ala Ser
                20   25   30

Ser Pro Ile Pro Val Val Ile Ser Gln Ser Glu Ile Gly Asp Ala Ser
                35   40   45

Arg Val Arg Val Ser Gly Gln Gly Leu His Glu Gly His Thr Phe Glu
            50   55   60

Pro Ala Glu Phe Ile Ile Asp Thr Arg Asp Ala Gly Tyr Gly Gly Leu
        65   70   75   80

Ser Leu Ser Ile Glu Gly Pro Ser Lys Val Asp Ile Asn Thr Glu Asp
                    85   90   95

Leu Glu Asp Gly Thr Cys Arg Val Thr Tyr Cys Pro Thr Glu Pro Gly
                100   105   110

Asn Tyr Ile Ile Asn Ile Lys Phe Ala Asp Gln His Val Pro Gly Ser
                115   120   125

Pro Phe Ser Val Lys Val Thr Gly Glu Gly Arg Val Lys Glu Ser Ile
        130   135   140

Thr Arg Arg Arg Arg Ala Pro Ser Val Ala Asn Val Gly Ser His Cys
145   150   155   160

Asp Leu Ser Leu Ile Pro Glu Ile Ser Ile Gln Asp Met Thr Ala Gln
                165   170   175

Val Thr Ser Pro Ser Gly Lys Thr His Glu Ala Glu Ile Val Glu Gly
                180   185   190

Glu Asn His Thr Tyr Cys Ile Arg Phe Val Pro Ala Glu Met Gly Thr
            195   200   205

His Thr Val Ser Val Lys Tyr Lys Gly Gln His Val Pro Gly Ser Pro
        210   215   220

Phe Gln Phe Thr Val Gly Pro Leu Gly Glu Gly Gly Ala His Lys Val
225   230   235   240

Arg Ala Gly Gly Pro Gly Leu Glu Arg Lys Glu Ala Gly Val Pro Ala
                245   250   255

Glu Phe Ser Ile Trp Thr Arg Glu Ala Gly Ala Gly Gly Leu Ala Ile
                260   265   270

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Ala Val Glu Gly Pro Ser Lys Ala Glu Ile Ser Phe Glu Asp Arg Lys
        275                 280             285

Asp Gly Ser Cys Gly Val Ala Tyr Val Val Gln Glu Pro Gly Asp Tyr
        290             295             300

Glu Val Ser Val Lys Phe Asn Glu Glu His Ile Pro Asp Ser Pro Phe
305             310             315             320

Val Val Pro Val Ala Ser Pro Ser Gly Asp Ala Arg Arg Leu Thr Val
            325             330             335

Ser Ser Leu Gln Glu Ser Gly Leu Lys Val Asn Gln Pro Ala Ser Phe
        340             345             350

Ala Val Ser Leu Asn Gly Ala Lys Gly Ala Ile Asp Ala Lys Val His
        355             360             365

Ser Pro Ser Gly Ala Leu Glu Glu Cys Tyr Val Thr Glu Ile Asp Gln
        370             375             380

Asp Lys Tyr Ala Val Arg Phe Ile Pro Arg Glu Asn Gly Val Tyr Leu
385             390             395             400

Ile Asp Val Lys Phe Asn Gly Thr His Ile Pro Gly Ser Pro Phe Lys
                405             410             415

Ile Arg Val Gly Glu Pro Gly His Gly Gly Asp Pro Gly Leu Val Ser
            420             425             430

Ala Tyr Gly Ala Gly Leu Glu Gly Gly Val Thr Gly Asn Pro Ala Glu
            435             440             445

Phe Val Val Asn Thr Ser Asn Ala Gly Ala Gly Ala Leu Ser Val Thr
        450             455             460

Ile Asp Gly Pro Ser Lys Val Lys Met Asp Cys Gln Glu Cys Pro Glu
465             470             475             480

Gly Tyr Arg Val Thr Tyr Thr Pro Met Ala Pro Gly Ser Tyr Leu Ile
                485             490             495

Ser Ile Lys Tyr Gly Gly Pro Tyr His Ile Gly Gly Ser Pro Phe Lys
            500             505             510

Ala Lys Val Thr Gly Pro Arg Leu Val Ser Asn His Ser Leu His Glu
            515             520             525
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```
Thr Ser Ser Val Phe Val Asp Ser Leu Thr Lys Ala Thr Cys Ala Pro
    530                 535                 540

Gln His Gly Ala Pro Gly Pro Gly Pro Ala Asp Ala Ser Lys Val Val
545                 550                 555                 560

Ala Lys Gly Leu Gly Leu Ser Lys Ala Tyr Val Gly Gln Lys Ser Ser
                565                 570                 575

Phe Thr Val Asp Cys Ser Lys Ala Gly Asn Asn Met Leu Leu Val Gly
                580                 585                 590

Val His Gly Pro Arg Thr Pro Cys Glu Glu Ile Leu Val Lys His Val
        595                 600                 605

Gly Ser Arg Leu Tyr Ser Val Ser Tyr Leu Leu Lys Asp Lys Gly Glu
        610                 615                 620

Tyr Thr Leu Val Val Lys Trp Gly His Glu His Ile Pro Gly Ser Pro
625                 630                 635                 640

Tyr Arg Val Val Val Pro
                645


<210> 12
<211> 211
<212> PRT
<213> Apoptin-Associating Clone

<400> 12
His Glu Gly Arg Gly Val Thr Gly Asn Pro Ala Glu Phe Val Val Asn
  1                 5                 10                  15

Thr Ser Asn Ala Gly Ala Gly Ala Leu Ser Val Thr Ile Asp Gly Pro
                20                  25                  30

Ser Lys Val Lys Met Asp Cys Gln Glu Cys Pro Glu Gly Tyr Arg Val
            35                  40                  45

Thr Tyr Thr Pro Met Pro Gly Ser Tyr Leu Ile Ser Ile Lys Tyr Gly
        50                  55                  60

Gly Pro Tyr His Ile Gly Gly Ser Pro Phe Lys Ala Lys Val Thr Gly
65                  70                  75                  80

Pro Arg Leu Val Ser Asn His Ser Leu His Glu Thr Ser Ser Val Phe
                85                  90                  95
```

```
Val Asp Ser Leu Thr Lys Ala Thr Cys Ala Pro His His Gly Ala Pro
            100                 105                 110

Gly Pro Gly Pro Ala Asp Ala Ser Lys Val Val Ala Lys Gly Leu Gly
            115                 120                 125

Leu Ser Lys Ala Tyr Val His Lys Ser Ser Phe Thr Val Asp Cys Ser
            130                 135                 140

Lys Ala Cys Ile Ile Met Leu Leu Val Gly Val His Gly Pro Trp Thr
145                 150                 155                 160

Pro Cys Asp Glu Ile Leu Val Lys Ala Arg Gly Gln Pro Ala Leu Gln
                165                 170                 175

Arg Val Leu Thr Cys Phe Lys Asp Lys Gly Glu Val His Thr Gly Gly
            180                 185                 190

Gln Asn Gly Gly Asp Tyr Gln Ile Pro Cys Lys Pro Leu Pro Leu Cys
            195                 200                 205

Gly Cys Pro
    210


<210> 13
<211> 213
<212> PRT
<213> Apoptin-Associating Clone

<400> 13
His Glu Gly Arg Pro Thr Glu Pro Gly Asn Tyr Ile Ile Asn Ile Lys
    1                   5                   10                  15

Phe Ala Asp Gln His Val Pro Gly Ser Pro Phe Ser Val Lys Val Thr
            20                  25                  30

Gly Glu Gly Arg Val Lys Glu Ser Ile Thr Arg Arg Arg Arg Ala Pro
            35                  40                  45

Ser Val Ala Asn Val Gly Ser His Cys Asp Leu Ser Leu Lys Ile Pro
    50                  55                  60

Glu Ile Ser Ile Gln Asp Met Thr Ala Gln Val Thr Ser Pro Ser Gly
    65                  70                  75                  80

Lys Thr His Glu Ala Glu Ile Val Glu Gly Glu Asn His Thr Tyr Cys
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Ile Arg Phe Val Pro Ala Glu Met Gly Thr His Thr Val Ser Val Lys
        100   105   110

Tyr Lys Gly Gln His Val Pro Gly Ser Pro Phe Gln Phe Thr Val Gly
        115   120   125

Pro Leu Gly Glu Gly Gly Ala His Xaa Val Arg Ala Gly Gly Pro Gly
        130   135   140

Leu Xaa Lys Ser Ser Trp Ser Ala Ser Arg Ile Gln Tyr Leu Gly Pro
145   150   155   160

Gly Lys Leu Val Leu Glu Ala Trp Pro Leu Leu Ser Xaa Ala Pro Ala
                165   170   175

Xaa Leu Xaa Ser Leu Leu Arg Thr Ala Arg Thr Ala Pro Val Val Leu
                180   185   190

Leu Met Leu Val Xaa Glu Pro Ser Asp Xaa Asn Pro Xaa Gln Val Ser
        195   200   205

Thr Lys Glu His Xaa
        210